

VEROMESSOR LOBOGNATHUS IN NORTH DAKOTA
(HYMENOPTERA: FORMICIDAE)¹

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In our field studies on the ants of North Dakota we have been in the habit of identifying our collections of *Pogonomyrmex* by casual inspection with the unaided eye. This seemed adequate, since there is only one species of this genus in the state and since we knew of no other ant that could be confused with *Pogonomyrmex*. But after reading Gregg's interesting paper² on *Veromessor* we hurriedly re-examined our material under magnification. (See Fig. 1.). Among a hundred nest-series of putative *Pogonomyrmex occidentalis* (Cresson) we discovered one of *Veromessor lobognathus* (Andrews). This is only the sixth collection of this species, but it extends the range northward by 450 miles. Since almost nothing is known about its habits and ecology we hoped that our field notes would contribute something, but we found them disappointingly laconic: "Under flat rock 32 x 20 x 2" lying on north wall of east-west valley. ATYPICAL." The word "atypical" is significant for it shows that at the time we regarded the ant as *P. occidentalis* and a *Pogonomyrmex* nest under a rock was something we had never seen. Our error was not detected until the autumn or winter of 1955. Consequently we could not return to the site until the summer of 1956. By that time southwestern North Dakota had suffered a year of drouth and ants (except *P. occidentalis*) were scarce and hard to find. We revisited the same hillside and literally "left no stone unturned"; in fact we turned them over twice—the second time after the late summer rains. But we found no trace of the

¹ This study was aided by a grant from the Louis W. and Maud Hill Foundation.

² Gregg, R. E. 1955. The rediscovery of *Veromessor lobognathus* (Andrews) (Hymenoptera: Formicidae). *Psyche* 62: 45-52.

coveted *Veromessor*. If moisture conditions improve, we plan to resume our search next summer.

THE LOCALITY

Billings County, North Dakota. T. 140 N., R. 102 W., sec. 1. On an ordinary map it can be located four miles north-northeast of Medora, in Roosevelt National Memorial Park (South Unit). The site is in the heart of the Little Missouri Badlands. June 12, 1954. Collected by G. C. and J. Wheeler, No. 556. Altitude approximately 2500 feet above sea level.

HABITAT

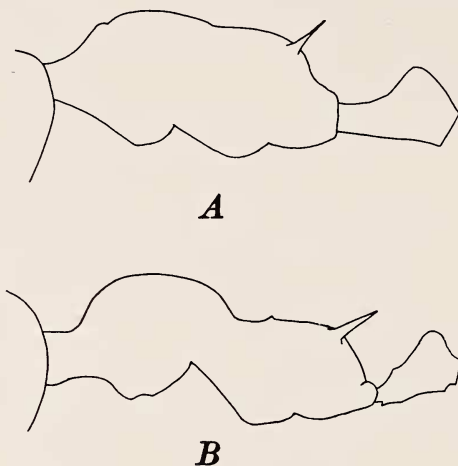
The nest was discovered in a tributary valley entering the valley of the Little Missouri River from the east. This tributary valley is short, narrow, steep-walled and about 200 feet deep at the mouth. At the bottom is a small intermittent stream with little or no flood plain. The soil is a sandy silty loam.

The south wall of the tributary valley is densely covered with a thicket of Rocky Mountain red cedar (*Juniperus scopulorum* Sarg.). The thicket floor is covered with duff and moss and is relatively humid.

In marked contrast, the nearby north wall—as the result of greater insolation—is treeless and sparsely beset with grass and low shrubs, such as sagebrush (*Artemisia frigida* Willd. and *A. tridentata* Nutt.), saltbushes (*Atriplex* spp.) and rabbitbrush (*Chrysothamnus graveolens* Nutt.). *Yucca* (*Yucca glauca* Nutt.) and prickly pear (*Opuntia polycantha* Haw.) are present but very scarce. The most abundant and conspicuous ant is the western harvester (*Pogonomyrmex occidentalis*). Scorpions (*Urocyon boreus* Girard) are common under rocks.

Our colony of *Veromessor lobognathus* was found under a rock halfway up the north wall. Its occurrence on a slope with southern exposure is significant in interpreting the distribution of this species, i.e., why a southwestern species occurs so far to the north. "The Upper Austral Zone, the Upper Sonoran, or semiarid subdivision of which penetrates only into the warmest corners of the

State, is in no part sufficiently extensive to be marked by entirely characteristic mammals, birds, or plants. In its narrow strips along the Missouri Valley below Bismarck, down the Missouri and Yellowstone Valleys to Williston, along the Little Missouri Valley above the Killdeer Mountains, and on many dry, warm slopes between these



Text figure 1. Thoracic profiles of (A) *Pogonomymex occidentalis* (Cresson) and (B) *Veromessor lobognathus* (Andrews), both x8.8.

areas, it is strongly characterized. So near the edge of a zone, however, the slight inclination of a slope to the north reduces the heat received from the sun's rays sufficiently to change the flora and fauna in part or wholly to that of the colder, higher zone, while a steep slope facing the direct rays of the sun will attract many species of the warmer, lower zone above their normal limits."³

THE LARVA

Genus VEROMESSOR Forel

Body curved ventrally, thorax only moderately stout. Body hairs sparse and short; of three types: (1) the shortest and most numerous, tip simple or bifid; (2) longer,

³ Bailey, Vernon. 1926. A biological survey of North Dakota. U.S. Dept. Agric., Bureau of Biol. Survey, North American Fauna, No. 49. p. 8.

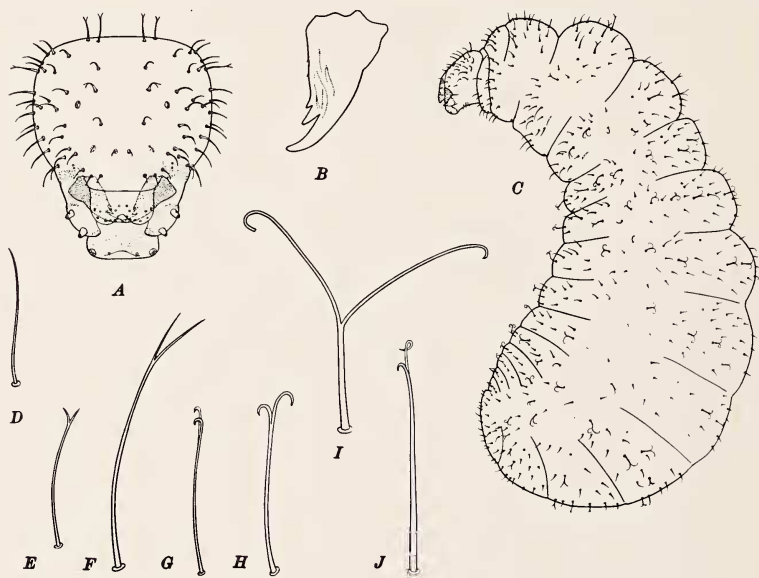
with the tip bifid; (3) also longer, bifid, the branches short to long and recurved at the tip. Antennae minute. Head hairs moderately numerous, short, with the tip simple or bifid. Mandibles with the apex forming a long large round-pointed tooth which is curved medially; the two medial teeth prominent and round-pointed; a few spinules on the medial surface. Maxillae with the apex spinulose. Labium moderately spinulose. Dorsal portion of hypopharynx with sublongitudinal ridges; ventral portion spinulose, the spinules minute and in numerous subtransverse rows.

Veromessor lobognathus (Andrews)

(Text figure 2)

Body length (through spiracles) about 6.8 mm. Stout; diameter greatest at abdominal somite v, diminishing gradually to the anterior end and rapidly to the posterior end, which is broadly rounded. Whole body curved ventrally. Anus ventral. Lateral longitudinal welts present. Leg, wing and gonopod vestiges present. Spiracles small; the mesothoracic the largest. No spinules seen on the integument. Body hairs sparse, short and uniformly distributed. Of three types: (1) 0.036-0.094 mm long, with the tip simple or bifid, on every somite, the most abundant type; (2) 0.094-0.156 mm long, with bifid tip, on the thorax and abdominal somites ix and x; (3) 0.078-0.156 mm long, bifid, with the branches short to long and recurved at the tip, on the metathorax and abdominal somites I-IX. Cranium subrectangular in anterior view, with the occipital angles rounded, slightly broader than long. Antennae minute, each with three sensilla, each of which bears a spinule. Head hairs moderately numerous, slightly curved; short (0.036-0.086 mm long), with the tip simple or bifid. Labrum small, bilobed, breadth nearly twice the length; anterior surface of each lobe with 10 sensilla; ventral border with a few minute spinules; posterior surface spinulose, the spinules minute and in short arcuate rows, the rows transverse dorsally and longitudinal ventrolaterally; posterior surface with two isolated sensilla

and a cluster of three sensilla on each lobe. Mandibles rather small; heavily sclerotized; subtriangular in anterior view; the apex forming a long, rather large tooth which is curved medially; medial surface with two rather large round-pointed teeth on the distal half and a few ridges bearing spinules on the proximal half; anterior surface with a few longitudinal ridges. Maxillae with the apex spinulose, the spinules minute and in short arcuate rows; palp paxilliform with one lateral sensillum (bearing a spinule) and four apical (two small and bearing a spinule each and two larger and encapsulated) sensilla; galea digitiform, with two apical sensilla. Labium with the anterior surface spinulose, the spinules minute and arranged in short transverse rows; palp a boss with five apical sensilla; an isolated sensillum between each palp



Text figure 2. Larva of *Veromessor lobognathus* (Andrews). A, head in anterior view, x47; B, left mandible in anterior view, x117; C, larva in side view, x14; D and E, type 1 body hairs, x217; F, type 2 body hair, x217; G and H, type 3 body hairs (with short branches) in side and surface views, x217; I and J, type 3 body hairs (with long branches) in surface and side views, x217.

and the opening of the sericteries; the latter a short transverse slit in an anteroventral depression. Dorsal portion of the hypopharynx with sublongitudinal ridges, ventral portion spinulose, the spinules minute and in numerous subtransverse rows. (Material studied: six larvae from the nest cited above.)

Since this is our only representative of the genus we do not know whether it differs as much from its congeners as does its adult. It does, however, resemble the larva of the closely related genus *Novomessor*.